WASHINGTON STATE DEPARTMENT OF ECOLOGY

Support Document
(May 27, 2004)

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(May 27, 2004)

for the Proposed Air Operating Permit Issued to

Goldendale Aluminum Company
85 John Day Dam Road
Goldendale, WA 98620

State of Washington
DEPARTMENT OF ECOLOGY
300 Desmond Drive
P.O. Box 47600
Olympia, Washington 98504-7600

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If you have special accommodation needs or require this document in alternative format, please contact Dolores Mitchell at Washington State Department of Ecology's Industrial Section at 360-407-6057 (voice) or 1-(800) 833-6388 for TTY or email: dmit461@ecy.wa.gov

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Introduction

This Operating Permit Support Document fulfills the operating permit rule “Statement of Basis” requirement and explains particular portions of the air operating permit for the Goldendale Aluminum Company (GAC) located in Goldendale, Washington.

This document is not part of the operating permit for GAC. Nothing in this document is enforceable against the permittee, unless otherwise made enforceable by permit or order.

This support document also addresses Ecology’s consolidation of the orders issued in the past to Goldendale Aluminum Company and previous owners. All orders issued to previous owners are considered to be applicable to GAC. Numerous orders and amendments have been issued approving new, or modifications to, operations at the facility. GAC requested consolidation of these orders to accomplish several objectives. The primary purpose was to facilitate issuance of the Title V Air Operating Permit. Some terms and conditions in orders did not lend themselves to incorporation into a Title V Air Operating Permit. Other terms and conditions no longer reflected current facility practices. A third objective was to achieve consistency in approach to compliance concerning such parameters as opacity. The consolidated order (Order Number 1169-AQ04) provides a summary of the previously issued orders.

Statement of Basis

When the Department of Ecology issues a draft operating permit, it is required to provide a statement that sets forth the legal and factual basis for the draft permit conditions, including references to the applicable statutory or regulatory provisions. [WAC 173-401-700(8)]

Facility and Process Descriptions

GAC primary reduction plant is located at 85 John Day Dam Road, Goldendale, Washington. This plant sits alongside the Columbia River in Washington State. The aluminum smelter, that is now Goldendale Aluminum Company (GAC), commenced operations as Martin Marietta in November 1971. The facility has been owned and operated by several companies in the past 30 years. In late 1984 Martin Marietta sold the facility to Commonwealth Aluminum. Commonwealth operated the facility from 1985 through February 1987 when they closed the facility. The facility resumed operations under Columbia Aluminum Corporation in August 1987 through May 1996 when the Goldendale Aluminum Company assumed operations. In December 2000, the smelter was temporarily curtailed 90 percent of its production due to lack of power supply. In April 2003, GAC totally shutdown the smelter due to cost of electric power supply.

The smelter has a total 526 electrolytic reduction cells in which aluminum metal is produced. The cells are arranged in three lines, designated A, B, and C/D, with 170, 170, and 186 cells, respectively. The A and B lines share many supporting facilities and emission points, as does the C/D line.At full capacity, the smelter produces a norminal 176,000 tons of aluminum and aluminum alloys per year and supports a work force of 650 employees. The plant facilities include a carbon plant, three reduction cell lines, a casthouse, a laboratory, administrative offices, and a sewage treatment plant.

The smelter produces aluminum via the Vertical Stud Soderburg Process with Sunitomo Technology. In the process, the ore (aluminum oxide) is dissolved in molten cryolite (a salt composed of sodium, aluminum, and fluoride) and the aluminum metal is disassociated from the oxide by electrolysis. The anodes of the electrolytic cells are composed of carbon, and the oxygen released from the electrolysis combines with the anode carbon material to form carbon dioxide gas. In this process, the anode material is continually consumed and must be replenished. Because of the high temperature involved in the process (960-980), a minor amount of anode material is also consumed by air burning in those areas where the anode is not protected by its casing or not protected by submersion in the salt bath.

The smelter consumes approximately two pounds of alumina (aluminum oxide) and one-half pound of anode carbon material for each pound of aluminum metal produced. Replenishment anode material is manufactured onsite in the carbon plant (paste plant).

In the **paste plant,** calcined petroleum coke is crushed, screened, and blended with a measured amount of coal tar pitch, then heated to melt the pitch and mixed in large, continuous mixers to ensure even coating of all coke particles with liquid pitch. The resulting paste is extruded through die plates to form briquettes which are water-quenched to re-congeal the pitch and form a hard briquette which is conveyed and stored by conventional means.

Particulate emissions from pitch and coke handling and storage are controlled using baghouses. Particulate and hydrocarbon emissions from the pitch/coke mixing operation are controlled using a high-efficiency air filtration (HEAF) system that incorporates a moving, nonreusable filter belt.

Aluminum metal is produced from alumina ore in electrolytic reduction cells. There are two basic cell designs, prebake and Soderberg. GAC uses vertical stud Soderberg (VSS) cells. The **reduction cells** are composed of an outer steel shell the shape of a large bathtub and are internally lined with layers of insulating refractory and high temperature refractory. Cell linings are composed of conductive, semi-graphitic carbon laid over the insulation and refractory materials to form a large, shallow reservoir. Steel collector bars are installed into the bottom portion of the carbon lining and protrude through the shell to connect to the current-carrying busbars to provide a conducting path for the electrolytic current required. The anode is then installed over the pot, leaving space for the alumina ore and bath materials. The anode consists of a large quantity of coke/pitch briquettes pierced with steel electrodes. High amperage-low voltage electrical power is applied to the cathodes and anodes to heat the cells and transform the alumina ore into aluminum. Coke/pitch briguettes are added daily to the tops of the anodes of each cell. As the anode material is consumed at the bottom of the anode and new materical is added to the top, the coal tar pitch fraction of the anode briquettes thermally cracks into simpler molecules and the pitch "cokes out" to form carbon anode.

Air pollution control is an essential part of operating a primary aluminum smelter due to the large amount of air pollution generated. Air pollution control systems employed at GAC includes a primary emissions control system and secondary emissions control system.

The **primary emissions control system** at the Goldendale smelter uses three separate emissions control technologies to control hydrogen fluoride (HF), particulate, and sulfur dioxide. Virgin alumina ore is injected into exhaust gas stream to absorb HF, the baghouses filter particulates, and the wet caustic scubber is used to remove SO_2. In addition, there is a burner on each end of the cell to convert carbon monoxide to carbon dioxide.

The primary emissions control system recaptures most of the exhaust gases from the cells; the uncapured exhaust gases that enter the cell line buildings are collected by the **secondary emissions control system** in intakes near the building ceilings. These exhaust gases are treated by wet scrubbers to remove HF, SO_2, and particulate prior to discharge to the atmosphere. Scrubber water is recirculated through the wastewater treatment plant, where it is treated to remove particulates, insoluble fluoride precipitates, sulfate and condensed hydrocarbons. Water to the scrubbers may be turned off periodically for maintenance activities or during freezing weather.

Molten metal from the cell lines is transported by special crucibles to the **casthouse**, where it is alloyed and cast in large, refractory lined gas-fired casting furnaces, into the various primary aluminum products. During the process of preparing the molten aluminum for casting, the metal in the furnaces is fluxed to remove dissolved gases and to settle particulate matter carried in suspension within the liquid metal. The dross that forms on the surface of the metal is skimmed from the metal, cooled, and transported to the dross storage building. Aluminum metal spill, saw chips, and off-specification aluminum products are re-blended with current production and recast into usable products.

Supporting facilities and equipment include the wastewater treatment plant, a sewage treatment plant, the west surface impoundment, three boilers, and vehicles. These facilities and equipment are described below.

The wastewater treatment plant consists of two clarifiers which are used to treat water from the secondary emission control system wet scrubbers. Clarifier sludge is chemically treated to remove fluoride and to reduce the liquid content of the sludge. Finally, the sludge is dewatered into a solid using a drum filter. Dewatered sludge solids are shipped and disposed at the Rabanco swlandfill in Roosevelt WA. Previously, solids were disposed at the on-site West Surface Impoundment.

An on-site active sludge sewage treatment unit treats sanitary waste produced at the facility.

The smelter has two boilers that are natural gas-fired. The boilers each has heat input rates of 5 MM Btu per hour. The facility also has natural gas-fired furaces at the cashouse.

Vehicles used at the smelter include forklifts, front end loaders, specialized transport tractors, trucks, mobile cranes, and other vehicles fueled with gasoline, diesel, or propane. The primary fuel used in the plant is diesel. Gasoline and propane are also used.

Periodic Monitoring

EPA periodic monitoring guidance lists the following factors to be considered in arriving at appropriate periodic monitoring methodology. These factors were considered when monitoring, recordkeeping or reporting requirements were not specified in the underlying applicable requirement.

1. <u>Likelihood of violating the applicable requirement (i.e. margin of compliance)</u>: When considering this criterion, Ecology evaluated available source test data and the operation and maintenance procedures currently in place at the Goldendale Aluminum Company. When the unit consistently performs well below the standard and the facility has a good O & M history, periodic monitoring may be less frequent or may rely on preventative measures (see functional integrity discussion) below.

2. Necessity of add-on controls for the unit to meet the emission limit: This criterion allows for the consideration of relative risk in the determination of appropriate periodic monitoring. Those sources that present the largest risk to the environment in the event of a failure of add-on controls, require frequent source testing as well as continuous evaluation of surrogate performance measures and O & M measures. Also considered are the presence of procedures or processes that shut down the unit if the control systems are not operating

3. Variability of emissions from the unit over time: Units which perform consistently require less frequent source testing than those where emissions vary widely

4. The type of monitoring, process, maintenance, or control equipment data already available for the emission unit: Careful consideration is given to the type of control device in use and the demonstrated ability of the company to operate and maintain the device effectively. Control devices such as baghouses can be monitored visually and still provide a high degree of certainty that the unit is functioning appropriately. Therefore source testing can be done less frequently if the company has a history of compliance with operation and maintenance requirements. The addition of functional integrity inspections for all units covered by the AOP requires weekly visual checks of the control equipment and follow-up corrective action whenever visible emissions, leaks in the duct work, excess vibration, inappropriate pressure drop are observed. This requirement focuses on early detection and prevention of problems.

5. Technical and economic considerations associated with the range of possible monitoring methods: Ecology considered the cost versus the benefit of source testing, including, for many sources, the cost of installation of access ports. For a number of small baghouses at the Goldendale Aluminum Company, the following cost factors weighed against the inclusion of periodic source testing;
   - Routine source testing and installation of access to these units would cost an estimated total of more than $600,000 over the 5-year permit.
   - Source testing produces very few compliance data points; inspection/correction and parametric monitoring assure much closer attention and yield much more frequent and useful data.
   - For very small units, the added cost of this source testing is not justified when compared to the relative environmental risk if the unit is actually not meeting standards. For the largest units, where the environmental risk of not meeting the standard is much larger (in terms of mass or concentration), periodic stack testing is required.
   - Once the technology is installed, good O & M becomes the most crucial component of ongoing compliance with the limits.
   - Even without routine source testing, Ecology retains the authority to require source testing on a case-by-case basis.
   - Based upon air flow, the environmental impact from baghouses not directly associated with the potlines is very low. Total air flows from all these units

are less than one percent of the airflow from the potlines' roof vents and the dry scrubbers.

Comments on Specific Permit Conditions

A) Aluminum Plant Emission Standards:

All aluminum plants are required to meet the emission standards of WAC 173-415-030 and -060. WAC 173-415-030 states that "specific emission standards listed in this chapter will take precedence over the general emission standards of chapter 173-400 WAC. The requirements of Condition A.1. for visible emissions, Condition A.7. for fugitive emissions and Conditions A.11 and A.12 for SO_2, take precedence over the requirements of WAC 173-400-040(1), WAC 173-400-040(3)(a) and WAC 173-400-040(6), respectively.

B) Facility Wide Requirement Number A.1., A.5., and A.14. Plant-wide Operation and Maintenance:

WAC 173-415-030(6) requires aluminum plants to maintain the facility and operate and maintain air pollution control equipment consistent with good air pollution control practice. Determination of whether acceptable operating and maintenance procedures are being used will be based on information such as, but not limited to, monitoring results, the presence of visible emissions, review of operating and maintenance manuals and procedures, and inspection of the source.

This permit includes a requirement to visually inspect all baghouses on a weekly basis. This weekly functional integrity inspection includes a visual/sensory check for visible emissions, leaks in ductwork and housing, excessive vibrations/noise, and pressure drop. In this permit, functional integrity inspections are used as an indicator of compliance with particulate limits, opacity and O & M requirements for baghouses. Baghouses that are properly operated and maintained produce no visible emissions and easily meet a grain loading standard of 0.005 gr/dscf. Traditionally, O & M compliance has been demonstrated through observation of visible emissions and routine maintenance activities. Weekly inspection and documentation of additional operational conditions improves the company's ability to identify and correct problems long before an emission standard is violated. Because of this, the company will be required to invest in corrective action earlier than it would if the permit relied solely on visible emission observation or stack testing to demonstrate compliance. Corrective action will be initiated whenever visible emissions (or other findings from the functional integrity inspection, such as significant excess vibration) are observed. Records of inspections and corrective actions will be maintained. In addition, stack tests for particulate matter are also required of the largest baghouses.

C) Facility Wide Requirement Number A.1 - Opacity Permit Conditions:

For dust collector systems with baghouses, both the facility-wide O&M and functional integrity inspection requirements described above apply. As described above, baghouses that are properly maintained easily meet the opacity limits. The requirements for corrective action when visible emissions are observed are a more effective compliance strategy than occasional opacity readings. Therefore, no routine opacity monitoring is proposed, although Ecology retains the ability to require opacity readings upon request. Problems with operating practices are enforceable through the general requirement to operate and maintain facilities in a manner consistent with good air pollution control practice and through the functional integrity requirements.

For emission units without control devices that may produce visible emissions (e.g. potroom roof vents), routine opacity readings using the approved method (EPA Method 9) are impractical due to the configuration of the vents, the absense of accessible locations with appropriate viewing angle, and/or effects of weather. Opacity levels from these sources are generally minimal when good operation and maintenance practices are being used.

D) Facility Wide Requirement Number A.5 & Unit Specific Conditions - Compliance with Particulate Matter Requirements:

WAC 173-400-060 limits emissions of particulate matter to no more than 0.1 grains per dry standard cubic foot (gr/dscf). This regulation does not specify a testing or compliance frequency for this standard. Most administrative orders for Goldendale's baghouse units have PM emission limit of 0.01 or 0.005 gr/dscf. These limits are more stringent than the limit required by WAC 173-400-60.

Considering the EPA criteria for decisions on periodic monitoring, Ecology concluded the most important factors for determining the source test schedule used in this permit are air flow of the emission unit, the stringency of the grainloading limit, and whether the emission unit is controlled or uncontrolled. All emission units of concern are controlled. The end result is that a baghouse controlled emission unit should be source tested about once per year for each 20,000 cfm of airflow. An emission unit with 0.01 PM limit should be source tested about once every two-year for each 6,000 cfm of airflow. Emission units with a 0.1 PM limit and having less than 6000 cfm of airflow will not require source testing. Larger emission units (around 10,000 cfm) will have source tests required even if its PM limit is 0.1 gr/dscf rather than 0.01 gr/dscf.

The grainloading conditions in this permit for unit in Condition D.4 requires the permittee to conduct source testing (EPA Method 5 or 17) at defined intervals in order to certify compliance with the limit.

Source testing will not be required for the following smaller units found in: Conditions D.1, D.8, D.11, and D.14.

Emission units with a 0.1 gr/dscf limit are also required to limit the visible emissions from stacks to 20 percent opacity. Opacity exceeds 5% if you look at a stack with the sun behind you and you see any smoke. If the visible emissions from a stack are just over 5 percent opacity, its PM emissions will likely still be within the 0.1 limit in most of the practical conditions for aluminum smelters. Therefore, using the visible emissions check and the “find it, fix it” approach in conjunction with the functional integrity inspection, as a surrogate for source tests is a very practical approach, especially for these small baghouse units which account for only 5 % of the particulate emissions from the whole facility.

The requirement to conduct functional integrity insepections is applicable to each emission unit discussed above. The functional integrity inspections will provide an indicator of on-going compliance. The information gathered during the functional integrity insepections is used as a surrogate for actual testing to determine if the equipment is operating within specifications outlined in GAC’s standard operating procedures. The requirements to conduct functional integrity inspections, to properly operate and maintain the equipment, and to take corrective action when necessary are ongoing requirements which provide the assurance that the emission unit is in compliance. These requirements provide a compliance tool that is frequent, thorough, and consistent versus a source test or opacity readings that only indicate whether GAC is in compliance with a permit limit at one point in time.

E) Compliance with Particulate Matter Requirements in the Potrooms (B 24):

Particulate matter is emitted from potline operations from both the controlled potroom roof wet scrubbers and the potline dry scrubbers. Potline operations are also covered by a separate, more specific particulate matter standard contained in WAC 173-415-030(2). This regulation limits the emissions of particulate matter from the reduction process (potlines) to no more than 15 pounds of particulate matter per ton of aluminum produced.

All aluminum smelters are required to meet the emission standards of WAC 173-415-030 and -060. WAC 173-415-030 states that "specific emission standards" listed in this chapter will take precedence over the general emission standards of Chapter 173-400 WAC. The requirements of WAC 173-415-030(2) are at least as stringent as and take precedence over the requirement for grainloading in WAC 173-400-060.

F) SO_2 Permit Conditions (A.11 and A.12):

All aluminum plants are required to meet the emission standards of WAC 173-415-030 and -060. WAC 173-415-030 states that “specific emission standards listed in this chapter will take precedence over the general emission standards of Chapter 173-400 WAC. The requirements of condition A.11 (WAC 173-415-030(5)(a)) in this permit is at least as stringent as and takes precedence over the requirement for SO_2 (WAC 173-400 -040(5)(b)).

WAC 173-415-030(5) limits sulfur dioxide emissions from aluminum smelters to 60 lb per ton of aluminum produced on a monthly average basis, and also limits emissions to no more than 1,000 ppm SO_2 for an hourly average. Many smelters, including Goldendale Aluminum’s, presently control SO_2 emissions by limiting sulfur content in the coke and pitch used in the anodes. Goldendale has additional wet SO2 scrubbers as a part of the primary control system. The wet scrubbers have a SO2 removal efficiency of about 80 percent.

The following tabulated data is based on 18 months of actual emission test data (72 tests) from July 1, 1997 to December 16, 1998 from the primary system. The table includes the average and maximum SO2 mass and concentration emission rates.

SO2 Emission	lb/day	ppm
Average	352.32	12.97
Maximum	1135.04	42.72
Limit	7077	1,000
Average/Limit	0.050	0.013
Maximum/Limit	0.160	0.043

The above data indicates that the actual average mass emissions of SO_2 are only five percent of the limit and the actual average hourly concentrations of SO_2 emitted are approximately one percent of the allowable limit. The data also indicates the variability is relatively low and that even the maximum measured values would have met the allowable limits.   The data supports reducing the source test frequency from monthly to annually. In addition, even if the SO2 scrubbers were non-functional, the maximum SO2 emission rates would be increased by approximately 5 to 10 times to about 214 - 427 ppm. 427 ppm is still below the emission limit of 1,000 ppm.

The limit of 60 pounds of SO_2 per ton of aluminum produced, contained in WAC 173-415-030(5)(a), is based on an assumed carbon ratio of 0.5 pounds carbon to 1.0 pound aluminum and a three percent sulfur content in the coke material. Sulfur dioxide emissions will be calculated by a mass balance calculation, or, alternatively by source testing. The equation used for the mass balance calculation to determine the pounds of SO_2 per ton of aluminum produced limit is as follows:

$$\text{Pounds } SO_2/\text{ton Al} = (\Sigma C x S_C + \Sigma P x S_P + \Sigma O x S_O) \text{ x } 40/Al$$

where C, P, and O are the coke, pitch, and fuel oil usage during the month from each shipment, in tons; S_C, S_P, and S_O are the sulfur concentration of each shipment of coke, pitch or fuel oil respectively, expressed as a percentage; and Al is the aluminum production for the month. The factor of 40 derives from converting tons of raw materials to pounds (2,000 lbs/ton), converting the percentage of sulfur in raw materials to a decimal fraction (100), and converting the weight of sulfur to the weight of SO_2 (one pound of sulfur combines to make two pounds of SO_2).

G) Potroom Operation & Maintenance (B 22):

Operation and maintenance of processes and emission controls, in a manner consistent with good air pollution control practice, is a very substantial and consequential applicable requirement. As has been pointed out, over ninety percent (use >99%) of a potline's PM and fluoride emissions come from the potroom roof vents. These emissions are a direct result of the quality of the operation and maintenance activities in the potrooms. These operation and maintenance activities affect both gaseous emissions such as gaseous/hydrogen fluoride and particulate emissions.

Proper operation and maintenance encompasses many qualitative areas ranging from shield condition and placement to ore station leakage to general housekeeping. Pot shield condition and placement are a primary concern but not the only concern for good air pollution control practice.

For the purposes of the Air Operating Permit, potroom compliance with WAC 173-415-030(6) will be demonstrated through worker training and weekly inspections. GAC is required to conduct an annual environmental awareness training program in operation and maintenance practices, consistent with good air pollution control practice, for its employees. Teaching employees the environmental repercussions of their actions is a means to build awareness and annual training is a means to refresh the effect their actions have on the environment. The permit will also require GAC to conduct weekly inspections to reinforce the training and to evaluate the quality of the training. The intent of the weekly inspections is to assess potential problems caused by operation and maintenance.

H) Hazardous Air Pollutants - Primary and Secondary Aluminum MACT

Primary MACT

In October, 1997, USEPA promulgated National Emission Standards for Hazardous Air Pollutants (NESHAPS) representing Maximum Achievable Control Technology (MACT) for the primary aluminum industry. These rules are contained in the Code of Federal Regulations at 40CFR Part 63, Subchapter LL. Hazardous air pollutants (HAPs) for this industry include hydrogen fluoride and polycyclic organic matter, (POM). The MACT standards for primary aluminum were further subcategorized into major process areas producing emissions of either or both of these HAPs including potlines, paste plants, and bake ovens, and for potlines, still further subcategorized by the type of reduction cell employed. GAC is categorized in the federal MACT regulations as being within the vertical stud Soderberg (VSS) category.

In Soderberg plants, potlines produce and emit fluoride and POM both gaseous and particulate forms. Total fluoride standards address both gaseous and particulate forms of fluoride. Thus, MACT standards for Soderberg potlines address both POM and fluoride.

The MACT standards and (monitoring) requirements have profound impacts to the fluoride air emissions control from aluminum smelters. GAC has not installed continuous emissions monitors (CEMs) for gaseous/hydrogen fluoride emissions monitoring for each potlines.

The paste production process produces POM emissions. MACT standards for paste plants require a specific technology for POM emission control; dry coke scrubbers. Other technologies may be used if equivalency is demonstrated. GAC has already used a

Rotary Drum High Efficiency Air Filter (HEAF) since 1991. The POM removal efficiency of HEAF unit has been improved by adding temperature control unit in late 90's.

Ecology issued the Order (DE 90-I001) on July 23, 1990 and ordered GAC to monitor the concentration of the principal PAH constituents and the unit's removal efficiency. There were no PAH limits to be met in the Order. PAH is small subgroup of POM. Sampling and analysis of POM is more cost effective than these of PAH. Therefore, Ecology accepted GAC request to monitor POM instead of PAH.

Primary aluminum MACT regulations will apply at the time of the restart of the facility.

Secondary MACT

On March 23, 2000, the USEPA promulgated National Emission Standards for Hazardous Air Pollutants (NESHAPS) representing Maximum Achievable Control Technology (MACT) for the secondary aluminum industry. These rules are contained in the Code of Federal Regulations at 40 CFR Part 63, Subpart RRR. Hazardous air pollutants (HAPs) for this industry include organic HAPs, inorganic gaseous HAPs (hydrogen chloride, and chlorine) and particulate HAP metals. These MACT standards apply to secondary aluminum production facilities using clean charge, aluminum scrap, foundry returns or molten metal as the raw material and performing, among other things, including one or more of the following processes: furnace operations such as melting, holding, refining, fluxing or alloying; in-line fluxing; or dross cooling.

I) Insignificant Emission Units

Since monitoring, recordkeeping, and reporting have not specifically been required by Ecology for insignificant emission units per WAC 173-400-105 (First Paragraph), there are no air operating permit monitoring, recordkeeping, and reporting requirements for the insignificant emission units required by the permit. In the event that such monitoring, recordkeeping, and reporting requirements are imposed pursuant to WAC 173-400-105, an IEU would no longer qualify for the exemption from operating permit testing, monitoring, reporting or recordkeeping contained in WAC 173-401-530(2)(c). Further, WAC 173-401-530(2)(c) states that permits shall not require testing, monitoring, reporting or recordkeeping for IEUs except where generally-applicable requirements of the SIP specifically impose such requirements. At the time of permit issuance, there are no such requirements applicable to IEUs.

J) Ambient and Forage Fluoride Standards and Monitoring (A.2 – A.4):

Order No. 1169-AQ04 describes the requirement of routine monitoring of ambient air and forage for fluoride nearby the plant.

GAC has conducted off-site ambient monitoring for TSP, SO2, ambient air HF and HF concentrations in forage. By letter dated March 6, 2002, GAC requested discontinuation of future monitoring for TSP, SO2, and HF forage concentrations, and also requested that future ambient air HF monitoring be limited to the growing season. (March 1 through October 31). The consolidated order discontinues the off-site monitoring for TSP and SO2 and limits ambient air monitoring and forage monitoring for HF to the growing season (March 1 through October 31). Plant emissions for PM and SO2 will continue to be monitored as required by WAC 173-415-030.

K) Fallout (A.6), Odor (A.9), and Emissions Detrimental to Persons or Property (A.10):

Fallout, odor and emissions detrimental to persons or property, have not been a historical problem at Goldendale Aluminum's smelter. The problems for which these regulations apply occur when fallout, odor, or emissions detrimental impact Goldendale Aluminum's neighbors. Notification of such problems is expected to come from complaints by those property owners or personnel off the plant site. However, the permittee's own employees may also make the complaint. Accordingly, these permit conditions are complaint driven and requires the permittee to record any complaints received, assess the validity of the complaint and to take corrective action if the complaint is valid.

L) Corrective Action

There is a requirement to initiate corrective action in many conditions of the permit. Initiating corrective action can include, but is not limited to, preparing a work order, ordering parts, shutting down the unit, or completing the repair.

M) Collection and Removal Efficiency:

WAC 173-415-030(1)(b) requires potline primary emission control systems to be "designed so that the control of fluoride emissions will be equivalent to a total fluoride collection efficiency of eighty percent for Vertical Stud Soderberg pots. A primary emission control system with a design removal efficiency of at least ninety-five percent of the fluoride collected is required."

(GAC has no pot hoods)Efficiency is potentially a valuable measurement of environmental performance. Over ninety percent of a primary aluminum smelter's PM and fluoride emissions come from the potroom roofs and is in large part due to emissions escaping the pot's emission collection system. Accordingly, particulate and gaseous emissions of pollutants from the potrooms are by and large a function of hooding efficiency. Any effort to improve efficiency has a direct effect on reducing emissions to the atmosphere.

WAC 173-415-030(1)(b) requires at least 80% collection efficiency, and separately, at least 95% removal efficiency for vertical stud Soderberg cells. The treatment efficiency requirement is easily met by the dry alumina scrubbers. These scrubbers are typically better than 99 % efficient at normal operating conditions.

Ecology's Air Quality Program issued Technical Policy 103 on December 4, 2003. This policy states that for the purposes of the Air Operating Permits the collection and removal efficiency requirements of WAC 173-415-030(1)(b) are inapplicable. MACT requirements for fluoride in 40CFR 63.847 have superceded this requirement. Therefore collection and removal efficiency monitoring is not required in the final permit. As discussed in section G of this document additional operational controls were included in the final permit to ensure ongoing good O&M.